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(71) Applicant (for all designated States except US): **PRO-  
TECTIVE COMFORT GROUP, S.L.** [ES/ES]; Polígono  
Carrús, Calle del Aguila 15, E-03291 Elche (ES).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **REQUENA PE-  
NAT, Marcos** [ES/ES]; Urbanización La Almajada, Calle  
del Aguila 15, E-03110 Muchamiel (ES). **GUTIERREZ  
DE CABIEDES HIDALGO DE CABIEDES, Eduardo**  
[ES/ES]; Avda. Barañain, 2, 6º B, E-31011 Pamplona

(ES). **VILLAR LAGUNA, Rafael** [ES/ES]; Vial Flora de  
España, 12, 3ªA, E-03016 Alicante (ES). **GONZALEZ  
LOYOLA, Daniel** [ES/ES]; Calle Camí Fondó, 2, Esc.  
14 7ªA, E-03560 El Campello (ES). **CABEDO SERNA,  
Ricard** [ES/ES]; Avda. Abufereta, 45, E-03016 Alicante  
(ES).

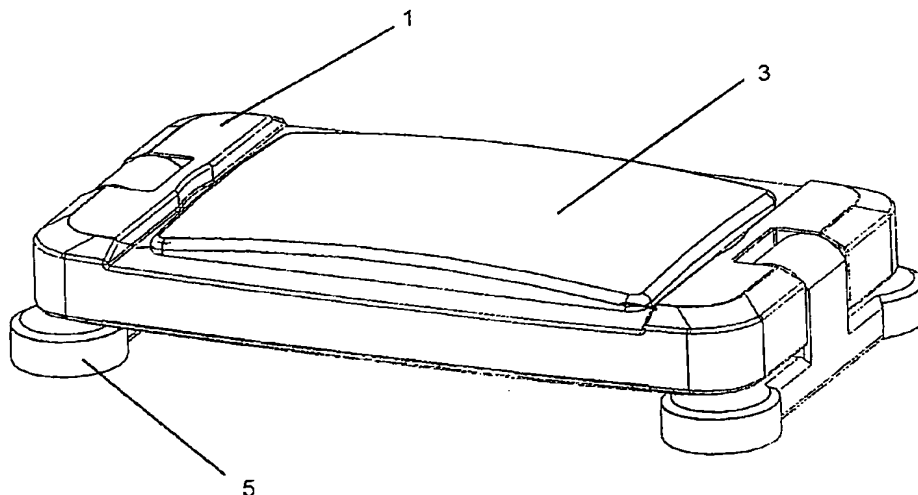
(74) Agents: **PONTI SALES, Adelaida et al.**; Oficina Ponti,  
S.L., C. de Condell de Cent 322, E-08007 Barcelona (ES).

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(54) Title: DEVICE FOR DOING PHYSICAL EXERCISES



(57) Abstract: Device to carry out physical exercise that comprises a double-sided support (1), with one upper and one lower side, one of which is considerably rigid and the other includes an inflatable flexible element (3) or the like, and it is characterised in that it comprises resting means for the support that allow users to carry out aerobic and cardio exercises and to work on their physical condition in general using the considerably rigid side. Thanks to these characteristics, the device of the invention is reversible and allows users to work on the areas of aerobic, cardio, balance, proprioception and coordination.

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DEVICE FOR DOING PHYSICAL EXERCISES

This invention refers to a device that allows users to carry out exercises to improve their physical condition, training and rehabilitation, which specifically works the areas dedicated to aerobic, cardio, balance, proprioception and coordination.

## BACKGROUND OF THE INVENTION

10

There are devices that allow users to carry out physical exercises that comprise a plastic support with a flat side for aerobic and cardio exercises. Said devices, popularly known as "Steps", comprise a contact platform or an element made of plastic material on the side on which said exercises are carried out. The height of the device is adjusted using supplements that are added on the base of the support.

There are devices that allow users to carry out physical exercises that comprise an inflatable flexible element shaped like a ball to work balance and proprioception. Said devices present the inconvenience of being very unstable as well as the fact that users cannot do exercises standing up.

EP0769287 A1 describes a device that comprises an inflatable flexible element that allows users to stand on. However, this element is designed for foot massage and in no case for performing balance exercises.

There are also devices that allow users to carry out physical exercises that comprise an inflatable flexible element but present the inconvenience that they are always auxiliary to other devices, and do not allow users to work balance in an integral manner.

US 6422983 describes an inflatable device that can be used for physical therapy, conditioning or training.

Said device has a double-sided support platform, a flexible element attached to one side of said platform and a clamp that attaches said flexible element to the platform. The flexible element has a semi-spherical shape  
5 when inflated, before its use. The pressure of the inflatable element can be modified, when users wish to modify the stability, by means of a small valve located on said device.

Said device can be used face up or face down to  
10 carry out physical exercises. In the latter case, the user stands on the side of the platform that does not have the inflatable flexible element attached.

The device disclosed in the American patent presents the inconvenience that it is not suitable for  
15 carrying out aerobic and cardio exercises, nor for improving the physical condition in general, since it is designed for working balance, proprioception and coordination specifically. Furthermore, given the fact that it includes an inflatable flexible element with a  
20 semi-spherical shape, over 20 cm high, the device works on the users' balance in a very unstable manner. The semi-spherical shape confers the device a very small support surface that is extremely unstable, increasing the risk of injuries and making it difficult for users to perform  
25 exercises laying down or leaning on the device. Furthermore, the circular shape of the flexible element makes pupils disoriented in physical exercises classes.

Another inconvenience included in the device disclosed in the American patent is that in order to  
30 modify the stability of the inflatable flexible element the users must change the inner pressure, which is very impractical in many cases since it involves interrupting the physical exercise class.

There are no devices for carrying out physical  
35 exercises that comprise a support made of plastic that is

reversible, with adjustable height, with a flat side for working the physical condition in general and aerobic and cardio areas specifically, and another side that comprises an inflatable flexible element that allows users to carry out exercises to improve balance, proprioception and co-ordination.

#### DESCRIPTION OF THE INVENTION

10           The object of this invention is to develop a device to carry out physical exercises improving the physical condition in general and aerobic, cardio, balance, proprioception and co-ordination areas specifically. The device also solves the aforementioned  
15 inconveniences and presents the advantages described hereunder.

          In line with this objective, the device of the invention comprises a double-sided support, one upper and one lower, one of which is considerably rigid and the  
20 other side includes an inflatable flexible element or the like and is characterised in that it comprises resting means for the support that allow users to perform aerobic and cardio exercises on the considerably rigid side and work on their physical condition in general.

25           Thanks to these characteristics, the device of the invention is reversible and allows users to work on the areas of aerobic, cardio, balance, proprioception and coordination, integrating a vast range of exercises and functions in a single element.

30           The term inflatable flexible element or the like refers to an element that admits elastic deformation to the extent admitted by any inflatable flexible element or, for example, an element made of a foam-based material.

          The term considerably rigid refers to an element  
35 that is more rigid than the flexible element or the like.

Preferably, said inflatable flexible element or the like is detachable and annexed to the support by joining means.

Preferably, said joining means comprises a housing, that accommodates said inflatable flexible element or the like.

Since the inflatable flexible element is detachable, it can be used individually and users can employ it upturned when carrying out physical exercises such as press ups or use it to lean their body on, etc. Furthermore, if said flexible element is inflatable, given its detachable nature, the stability of said inflatable flexible element is variable as regards direction and strength for one same inflation pressure, since said element behaves differently when used individually and when used restricted in the housing located on one of the sides of the support. Thus, the stability of the element can be adjusted without having to interrupt the class to inflate or deflate the device.

Preferably said resting means are feet that rotate from the support and around a considerably horizontal axis.

In view of these characteristics, the height of the device can be modified, allowing users to work with a varied range of levels of difficulty when carrying out exercises, since the device can also be used with the support bases looking outwards, leaning it directly on either of the upper or lower sides of the support.

Preferably, the housing that accommodates the flexible element and the flexible element or the like itself, comprise means to fix their position securely. This aspect guarantees the fixing of said flexible element onto the support, whilst the device is being used.

Preferably, said inflatable flexible element or the like is slightly dished. Consequently, the flexible

element provides less instability when carrying out balance exercises. The support area is larger than that of a semi-spherical flexible element, thus facilitating exercises, reducing the risk of injuries and improving support in exercises in which users are laying down or leaning on the device. On the other hand, it must be stated that, if the flexible element is inflatable, since it is slightly dished, it allows users to carry out gentle cardio exercises as well as balance exercises.

10 Preferably, said flexible element, being inflatable, has a rectangular base.

The rectangular shape of the base helps users orient themselves when compared to the same element with a circular shape base, since it avoids having to refer to other elements in the environment, which facilitates group exercises. Another advantage of the flexible element with a rectangular base, compared to the flexible element with a circular base, is that its behaviour is marked by two symmetry axes, which implies two different instabilities in terms of the direction of use and support, instead of the same 360° instability.

Preferably, said contact platform is made of a point-elastic material that has the capacity to absorb and restore energy. This allows for an optimal damping and bounce, which results in safety and comfort when carrying out the physical exercises.

Preferably said inflatable flexible element or the like comprises the area of the base that is the thickest or has the highest density, which results in an area with the highest rigidity that avoids excessive or inconvenient deformation whilst exercises are carried out, and facilitates the restriction of said support element.

30 Optionally, said detachable inflatable flexible element or the like comprises a platform joined to the base.

Also preferably, said flexible element, being inflatable, comprises supports on its base. Therefore avoiding the fact that the central part of the base of the flexible element is leaning directly on the floor or the  
5 base of the housing, which would consequently lead to it changing its behaviour when carrying out exercises.

Preferably, said support comprises gaps to partially scramble said feet, this allows for greater safety when carrying out the exercises, when the device is  
10 used leaning on either of the sides of the support.

Advantageously, said device comprises means to adjust the height. Thus, users can carryout exercises employing a wide range of different heights.

Preferably, said support comprises means to fix  
15 elastic bands to it that allow users to improve muscle toning, bodybuilding and rehabilitation.

Advantageously, said support, said feet and said flexible element comprise means to hold and handle it easily without having to hold it by the area that has been  
20 trodden on.

Advantageously, said inflatable flexible element, being inflatable, comprises at least one valve to modify the pressure inside it.

## 25 BRIEF DESCRIPTION OF THE DRAWINGS

So as to enable a better understanding of the terms stated above, a series of drawings have been included to, schematically and illustratively, represent a practical  
30 case of the embodiment.

In said drawings,

Figures 1 and 6 show an exploded view of a first and second preferred embodiment of the device of this invention.

35 Figure 2 is a view of a first preferred embodiment

of the device presenting the side including the inflatable flexible element.

Figures 3 and 8 show a view of the first and second preferred embodiments of the device of the invention presenting the feet in an open position, in parallel to the support.

Figure 4 is a view of a first preferred embodiment of the device of the invention presenting the side including the contact platform.

10 Figure 5 is a view of several devices such as the one envisaged in this invention piled on top of each other.

Figure 7 show a view of the base of the inflatable flexible element in a second preferred embodiment of the device of the invention.

Figures 9 and 10 show two views of the second preferred embodiment of the device of the invention in which a raiser has been attached.

## 20 DESCRIPTION OF TWO PREFERRED EMBODIMENTS

Figures 1, 2 and 4 present a device of the invention that comprises a support 1 made of blown or roto-moulded plastic that defines an upper and lower side. Each side includes a housing 2. One of said housings 2 accommodates, vertically and detachably, an inflatable flexible element 3, whilst the other accommodates a contact platform 4. The support 1 comprises support feet 5 located on the two lateral parallel sides. Both the support 1 and the feet 5 comprise materials and/or anti-sliding elements that help to keep the object in the same position whilst it is being used.

The contact platform 4 has a flat side 6 for users to carry out aerobic and cardio exercises. Said platform is manufactured in a polymeric material which is foam

Ethyl-Vinyl-Acetate-based, that is highly resistant and created to absorb impacts. It is a point-elastic synthetic flooring that allows an excellent restitution of energy since it contains micro cellular closed cell foam.

5           The flexible element 3 is inserted vertically in the housing 2 of one of the sides of the support 1, where it is sufficiently fixed for users to stand on the device without it moving. As can be observed, it is a rectangular base inflatable element, with rounded corners, sides  
10 perpendicular to the base and an slightly dished upper side. The base can be thicker, with several handles shaped like rebates and/or hollows that allow users to hold the flexible element 3 easily when using it individually. It can be used upturned for exercises such as press up or  
15 when users need to lean on it, etc.

          The slightly dished upper side of the flexible element 3 allows users to work on their balance without having to counter the instability the same element 3 would present with a semi-spherical upper side. Furthermore, the  
20 rectangular shape of the base, aids users' orientation, who do not have to refer to other elements in the environment (walls, lines, etc.), thus facilitating group exercises when compared to the same element with a circular base.

25           As displayed in figure 3, the feet 5 can rotate 180° around an axis located on each of the lateral sides, and parallel to the upper and lower sides, being able to present three different positions. Figure 3 presents the feet 5 completely opened towards the outside, accommodated  
30 on either flank of the sides of the support 1. In this case, the device can be positioned directly on the floor, on the side comprising the platform 4, thus leaving it ready for use on the side that comprises the flexible element 3, to carry out balance exercises. The support  
35 feet 5 can also be positioned on the side comprising the

platform 4 (see figure 2), with which the device would be ready for use on the side comprising the flexible element 3, although, in this case, in a more elevated position, thus allowing users to work on balance with a higher level 5 of difficulty.

The feet 5 can also be positioned on the side that comprises the flexible element 3; consequently the device is ready for use on the side that comprises the platform 4 (see figure 4), in order to allow users to carry out 10 aerobic and cardio exercises.

The fact that the feet 5 can be rotated allows users to adjust the height with which they use the device. This aspect, together with the fact that the flexible element 3 is detachable, allows for the device to be used 15 in a series of different manners:

1. Side of the support 1 on the flank comprising the platform 4, positioned on feet 5.
2. Side of the support 1 on the flank comprising the platform 4, positioned directly on the opposite side 20 for aerobic and cardio exercises, at a lower height.
3. Side of the support 1 on the flank comprising the platform 4, with one of the feet 5 in an open position, 180° as regards the support and the other base in an open position, 90° as regards the other side of the 25 platform 4, to allow users to carry out inclined aerobic and cardio exercises, or exercises that are performed laying down, such as sit ups, for example.
4. Side of the support 1 on the flank comprising element 3, positioned on feet 5.
- 30 5. Side of the support 1 on the flank comprising element 3, positioned directly on the opposite side, to allow users to perform balance exercises at a lower height.
6. Side of the support 1 on the flank comprising 35 the element 3, with one of the feet 5 in an open position,

180° as regards the support and the other base in an open position, 90° as regards the other side of said element 3, to allow users to carry out inclined balance exercises, and exercises laying down using said flexible element 3 as 5 their support element.

7. Flexible element 3 positioned upturned on the platform 4 of the device with the latter positioned directly on the floor.

8. Flexible element 3 positioned upturned on the 10 platform 4 of the device with the latter positioned on the bases 5.

9. Flexible element 3 individually in an upright position.

10. Flexible element 3 individually in an upturned 15 position.

11. Use of the device according to 1, combined with the use of the flexible element 3 individually, in an upright and upturned position.

12. Use of the device according to 2, with the use 20 of the flexible element 3 individually, in an upright and upturned position.

The behaviour of the flexible element 3 can vary in terms of the direction and the strength for one same inflation pressure, since it behaves differently when used 25 individually and used accommodated in the support 1. As deduced from the different uses set out in the previous paragraph, the device of the invention allows users to work on their physical condition in general, and improve aerobic, cardio, balance, proprioception and coordination 30 areas specifically, jointly and individually, at different heights, with one single element integrating a vast range of exercises and functions, such as rehabilitation exercises amongst others

Another advantage of the device of the invention 35 is that it can be piled up easily, as displayed in figure

5.

Figures 6 to 10 correspond to a preferred second embodiment of the invention. The details that differentiate this second embodiment from the first 5 preferred embodiment appear hereunder.

As can be seen in figure 6, the support 1 comprises a housing 2 with a series of flaps 7 on the side walls that fit into the recesses 8 located on the side walls of the flexible element 3. The joint fitting of the 10 flaps 7 and the recesses 8 allows for the correct fixture of the flexible element 3 in the housing 2, thus avoiding a lateral movement or unwanted deformation, towards the inside of the edges, when stepping on the device laterally.

15 Furthermore, the housing 2 comprises a series of ribs 9 positioned on the base that adapt to the recesses 10 of the flexible element 3 to ensure a suitable adjustment of said element 3 in the housing 2, which are also used to strengthen, as do the flaps 7, the structure 20 of said support 1.

The support 1 comprises a series of grooves 11 located on the larger sides, that are used to attach elastic bands that allow users to practice toning up and body building.

25 Said support 1 and the feet 5 comprise a recess 12 on their sides that acts as a handle to pick up the device. The four corners of the upper and lower sides of the support 1 of the device present rubber plugs 13 to avoid it sliding when the support 1 is positioned directly 30 on the floor.

The smaller sides of the support 1 comprise a gap 14 with housings 15 on the side in which the nipple 16 of the head of the feet 5 is inserted to establish the three positions of said rotating base 5. The gap 14 is designed 35 in order to allow the fitting of the head of said feet 5

onto the support 1, when said feet are positioned in an open position, 180° as regards the support 1. Figure 8 presents a vision of the feet 5 in said position, 180° as regards the support 1.

5       The inflatable flexible element 3 considered in the second preferred embodiment presents a slightly dished upper surface, the edges of which converge with the surface of the side of the support 1, avoiding the appearance of steps that constitute a risk of injuries of  
10 the user.

As noticeable in figure 6, the upper surface of the inflatable flexible element 3 has incorporated a series of superficial ribs 17 to avoid the user slipping when carrying out the exercises.

15       Figure 7 presents the base of said flexible element 3 displaying the recesses 10, corresponding to a ribs, that make the base of the element 3 more rigid, and a ridge 18 throughout the whole contour which, provides greater rigidity, and also acts as a support for said  
20 base, both when said flexible element 3 is used individually and when it is accommodated in support 1. The existence of said ridge 18 avoids the central part of the base of the flexible element 3 being positioned directly on the floor or on the base of the housing 2, and  
25 consequently, that said flexible element 3 modifies its behaviour when the user is carrying out exercises.

Figure 7 also presents a valve 19 to vary the pressure of the flexible element 3, as well as a view of the recesses 8 on the sides of the flexible element 3,  
30 that fit into the flaps 7 located on the housing 2 of the support 1. On the smaller sides, said recesses 8 configure a flap 20 that is used as a handle for the flexible element 3.

Figures 9 and 10 present a device of the invention  
35 with a raiser 21 inserted on the feet 5, said raiser 21 is

a double-height article, and consequently users can modify the height they employ to work on the device.

The device in figure 9 is prepared for use on the side that comprises the flexible element 3, to carry out balance, proprioception and coordination exercises, although in this case, they are carried out from a higher position given the introduction of the raiser 21. In figure 10, the device is prepared for use on the side that comprises the contact platform 4, to carry out aerobic and cardio exercises, although in this case, they are carried out from a higher position given the introduction of the double-height raiser 21.

Despite it has not been presented in either of the preferred embodiments, the device of the invention can be used in water activities, since support 1 has a lid that allows it to be filled up with water and a ballast, that enables the device to be submerged underwater during its use and consequently allows it to be used to carry out physical exercises.

Although this refers to two specific embodiments of the invention, obviously a person skilled in the art may introduce variations and modifications, or replace details with others that are technically equivalent, without departing from the scope of protection defined by the claims attached.

## C L A I M S

1. Device to carry out physical exercise that comprises a double-sided support (1), with one upper and one lower side, one of which is considerably rigid and the other includes an inflatable flexible element (3) or the like, characterised in that it comprises resting means for the support that allow users to carry out aerobic and cardio exercises and to work on their physical condition in general using the considerably rigid side.

2. Device according to claim 1, characterised in that said resting means are feet (5) that rotate around the support (1) and around a considerably horizontal axis.

3. Device according to claim 1, characterised in that said inflatable flexible element (3) or the like is detachable and is joined to the support (1) by joining means.

4. Device according to claim 1, characterised in that said considerably rigid side comprises a contact platform (4) joined to the support (1) by joining means.

5. Device according to claims 3 characterised in that said joining means comprise a housing (2), which accommodate said inflatable flexible element (3) or the like.

6. Device according to claim 5, characterised in that said housing (2) comprises means (7) to set the position of said inflatable flexible element (3) or the like.

15

7. Device according to claim 5, characterised in that said inflatable flexible element (3) or the like comprises means (8,10) to set its position in said housing (2).

5

8. Device according to claim 1 characterised in that said inflatable flexible element (3) or the like is slightly dished.

10

9. Device according to claim 8, characterised in that said flexible element (3), being inflatable, has a rectangular base.

10. Device according to claim 1 characterised in that said inflatable flexible element (3) or the like comprises the more density or thickest area of the base.

11. Device according to claim 1, characterised in that said flexible element (3), being inflatable, comprises supports (18) on its base.

12. Device according to claim 3 characterised in that said inflatable flexible element (3) or the like comprises a platform joined to the base.

25

13. Device according to claim 2, characterised in that said support comprises gaps (14) to partially scramble said feet (5).

14. Device according to claim 1, characterised in that said support (1) comprises means (11) to fix elastic bands for exercises entailing toning up muscles, body building and rehabilitation.

35

16

15. Device according to claim 4, characterised in that said contact platform (4) is manufactured in a point-elastic material that is capable of absorbing and restoring energy.

5

16. Device according to claim 1, characterised in that it comprises means (21) to regulate its height.

17. Device according to claim 1 characterised in 10 that said support (1) and said feet (5) comprise means (12) to hold and handle said device.

18. Device according to claim 1 characterised in that inflatable flexible element (3) or the like comprises 15 means (20) to hold and handle it.

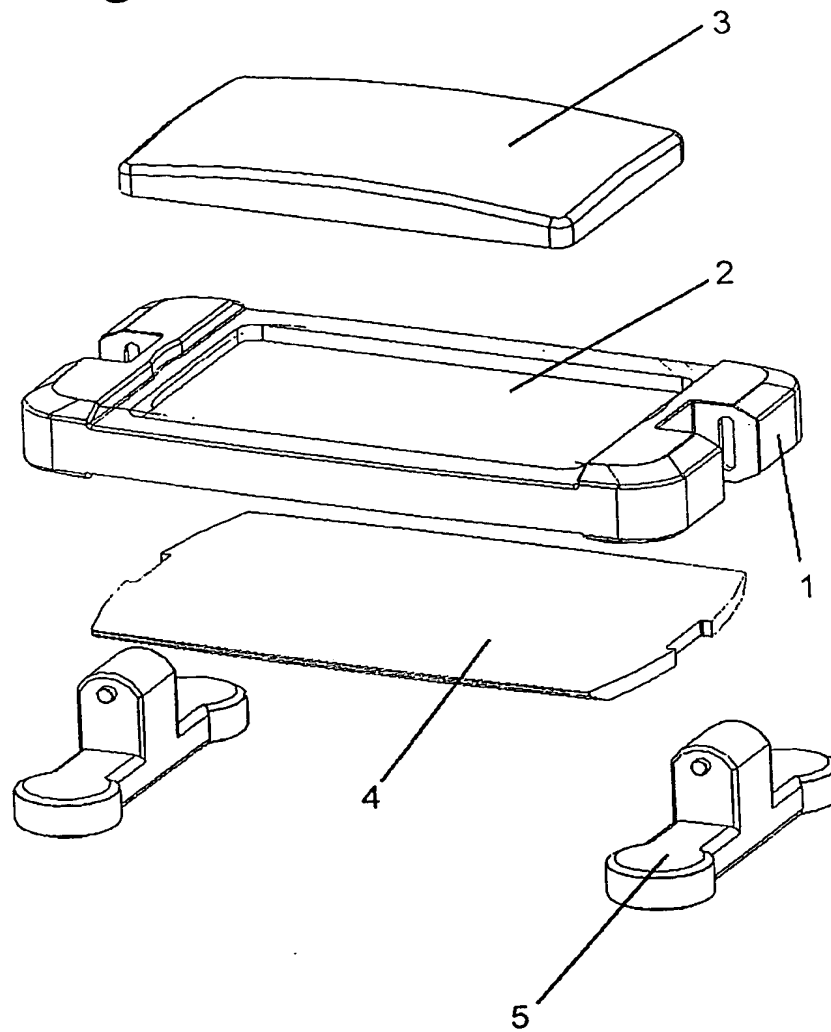
19. Device according to claim 1 characterised in that said flexible element (3), being inflatable, comprises at least one valve (19) to modify the pressure 20 inside it.

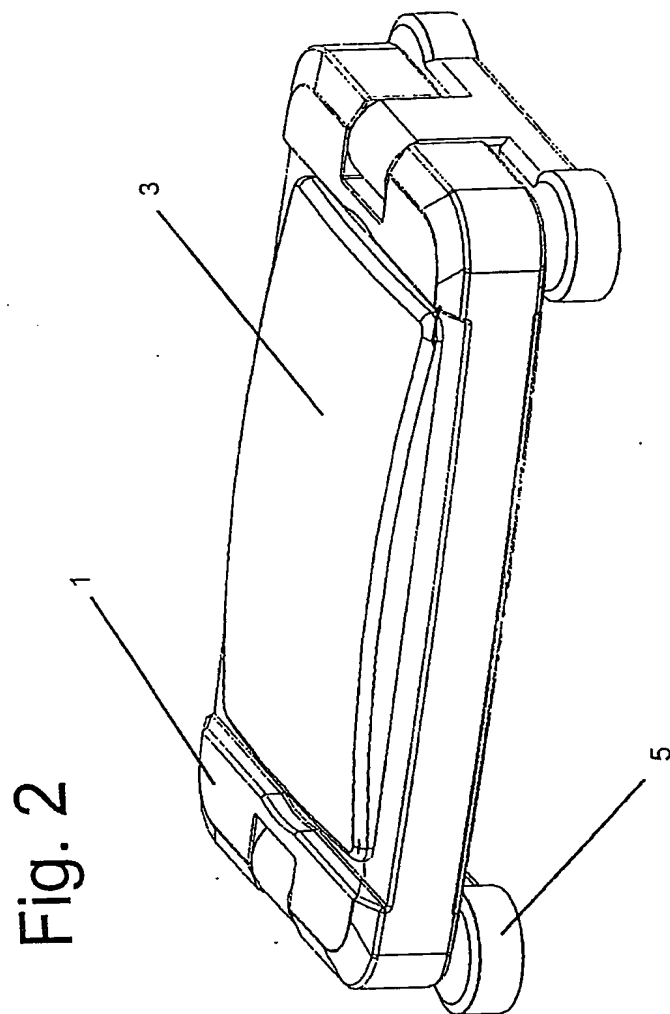
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Fig. 1

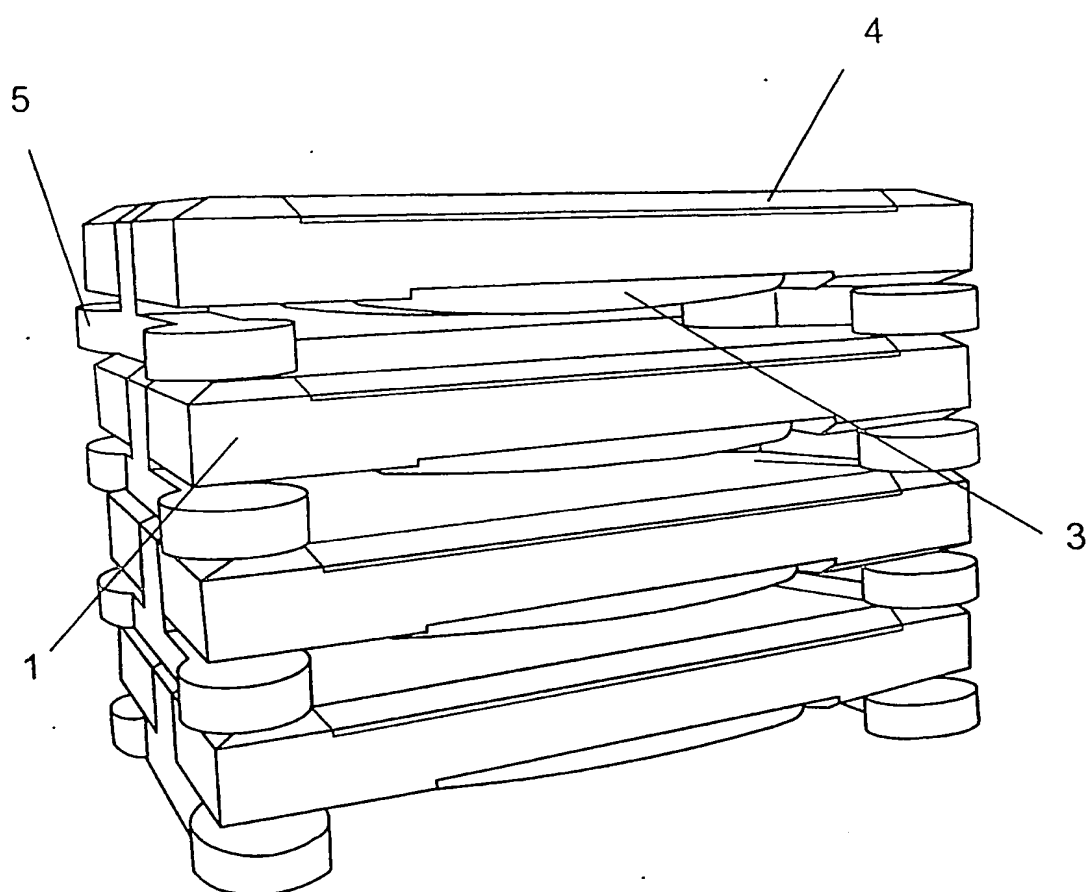




A schematic diagram of a mechanical assembly, likely a pump or motor component, showing a cross-section of a cylindrical body with a central shaft. The diagram is labeled with numbers 1 through 5. 1 points to the central shaft, 2 points to the outer casing, 3 points to a tapered section of the shaft, 4 points to the inner lining or seal, and 5 points to the outer casing. Arrows indicate the direction of rotation.

Fig. 4 is a perspective view of the rectangular frame 4. It shows the side rails 1 and 6, and the end rails 5. The frame is shown without the top and bottom panels.

Fig. 5



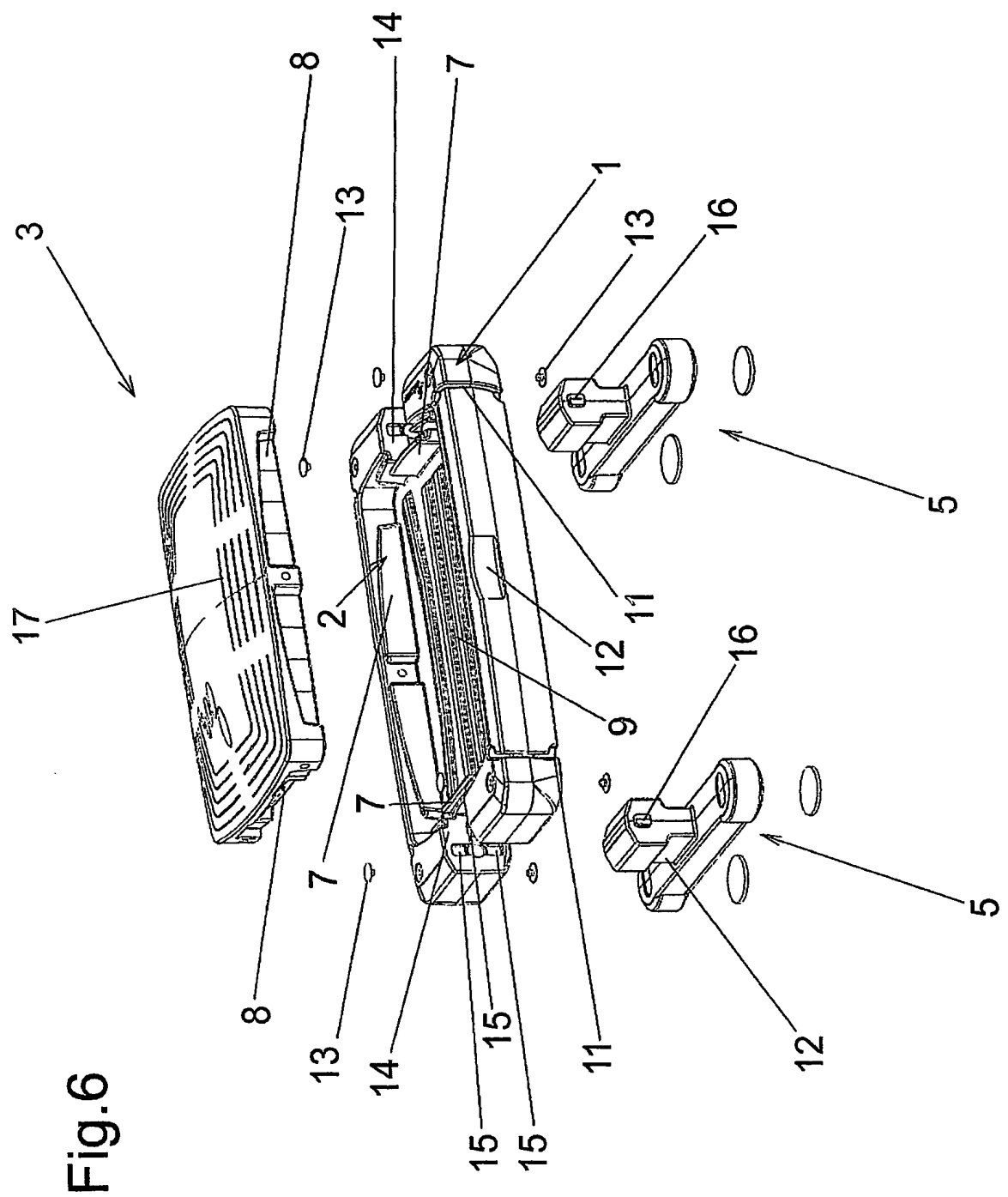


Fig.6

Fig.7

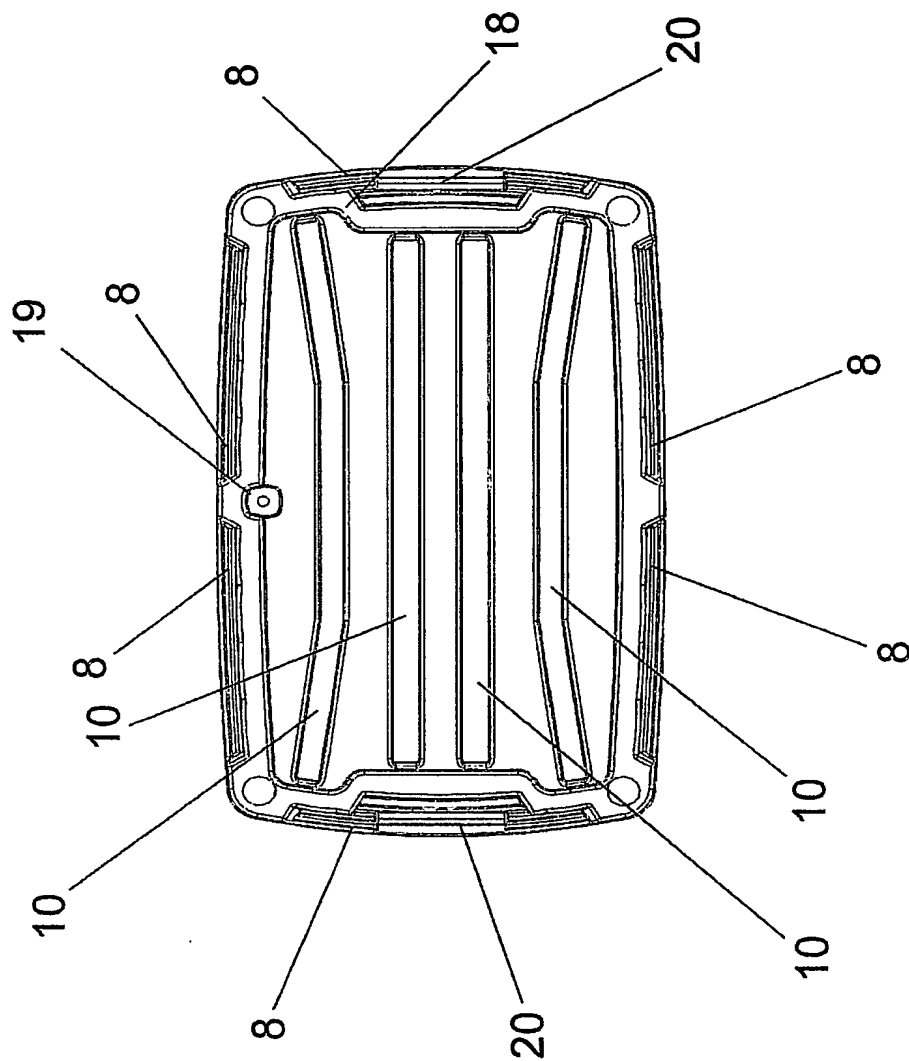


Fig.8

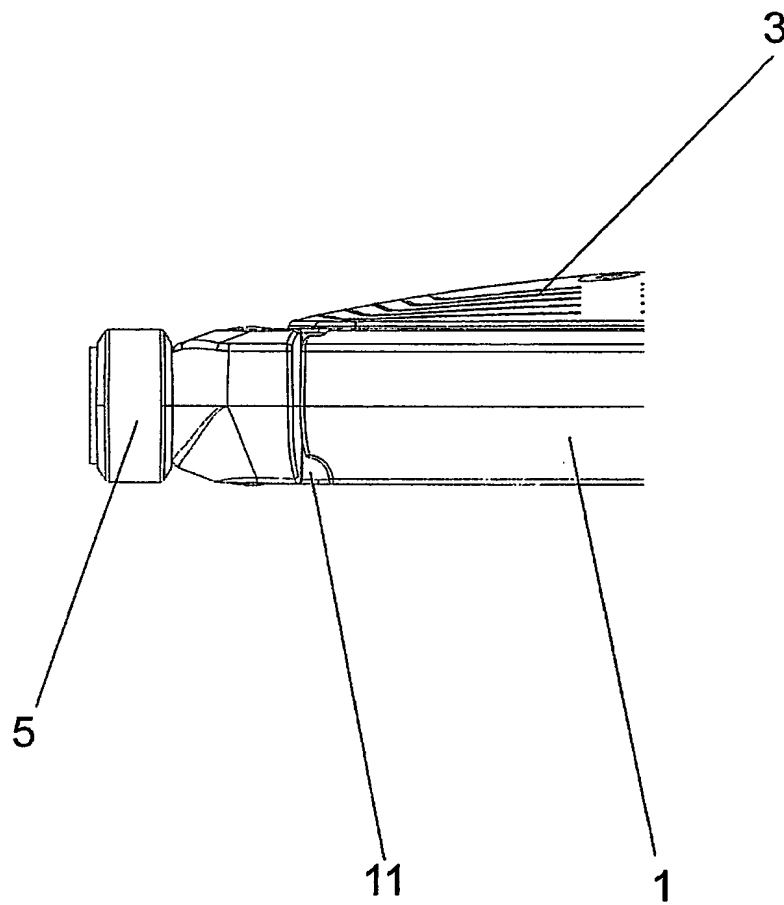


Fig.9

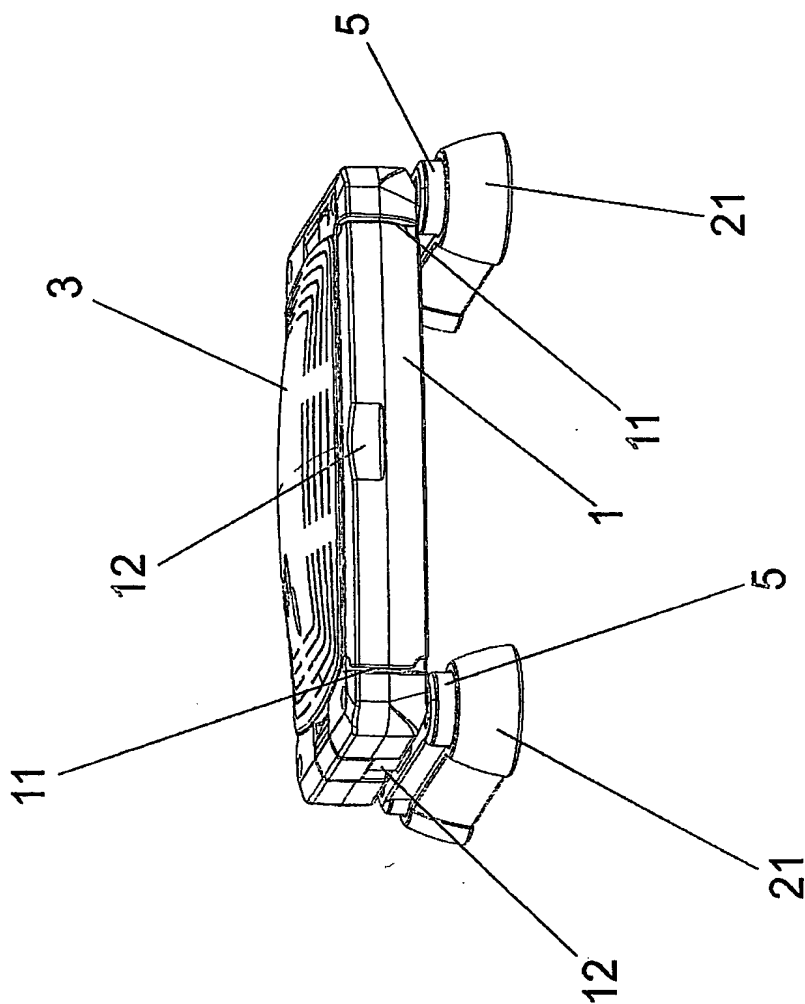


Fig.10

